MDP-P905 Digital Power Supply

User Manual V3.2

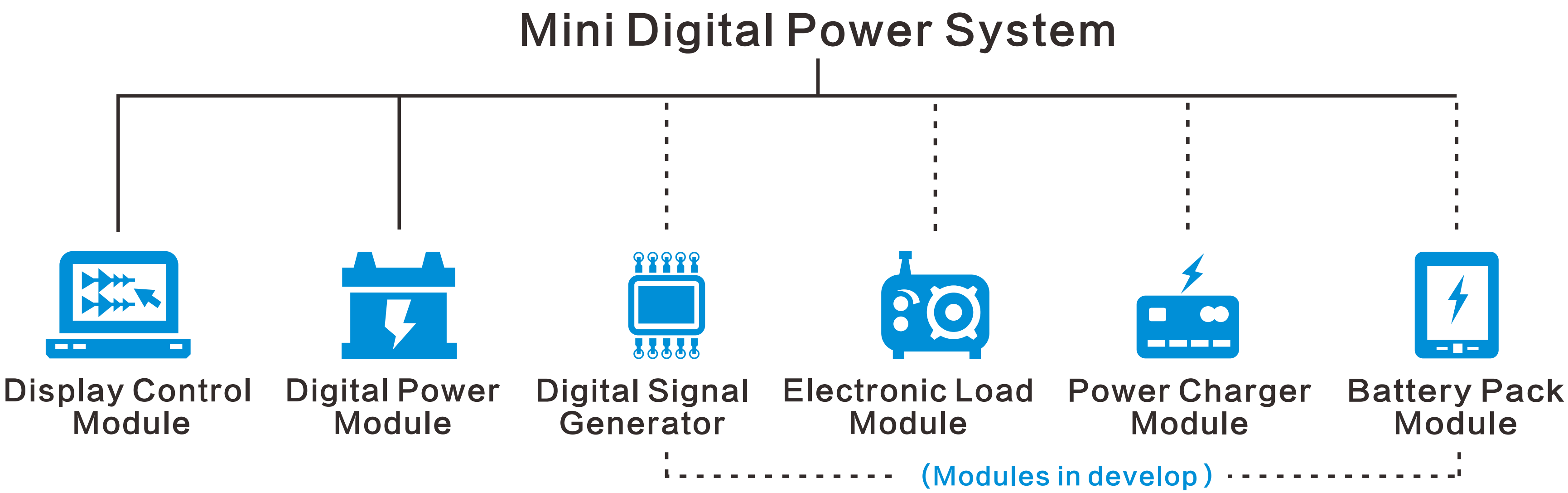
This user manual is based on MDP-P905 DFU V3.64, APP V1.25.

Contents

01/ Product Description

1.1 Product Introduction

MDP (Mini Digital Power System) is a system of programmable linear DC power supply system based on modular design, capable of connecting different modules for use as needed.



MDP-P905 mini digital power supply (module), as a programmable linear DC power supply with high performance, can operate independently and also be wirelessly connected with MDP-M01 display control module through 2.4G, bringing a free multi-channel combination (90W/circuit). With the index, stability, reliability, and clear user interface that can compare favorably with professional power supplies, MDP-P905 can provide User with the powerful functions including program-control output, timing output, sequential control and automatic compensation, etc. focusing on meeting diversified testing demands.

MDP-P905 power supply module: high-efficiency linear output, 0.25mV ripple and noise, speedy transient response, precision fine-adjustment supported.

1.2 Product Parameters

Input	DC4.2V-30V (2.7V after starting), 100mA-6A; QC3.0 supported
Output	0-30V 0-5A, 90W Max
Adjustment rate	Load adjustment rate<±0.01^%
	Power adjustment rate<±0.01^%
Ripple and noise	250uVms/3mVpp
Transient response time	≤4uS
Line-loss compensation range	5mR-100mR
Safety Protection	Input overvoltage, Under-voltage protection, Anti-reverse connection protection, Anti-backflow protection, Over temperature protection, Over current protection
Functional characteristics	Support positive/negative voltage (symmetrical power supply), Series connection pressurization, Parallel connection current sharing, Free combination of collaborative load, Intelligent power allocation

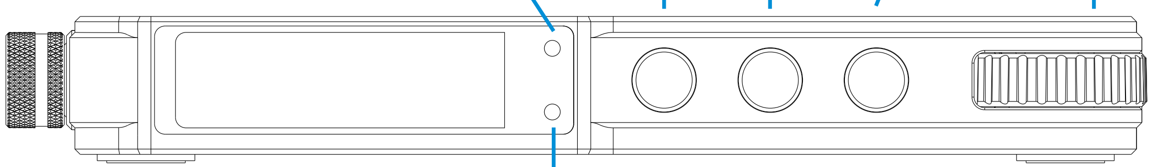
Other features	Automatically shut down and enter micro-power dissipation mode
	Support USB firmware upgrade
	Support user calibration
Size	107*66*13.6mm
Weight	143g

1.3 Applications

- Property verification and fault diagnosis of devices and circuits
- Power supply testing of RF and microwave circuits or modules
- Universal tests and teaching experiments in R&D laboratory
- Emergency power supply for model airplanes and vehicles
- Quality control and quality inspection
- Maintenance of digital products
- Supply purified power for high-accuracy digital-analog hybrid circuits and Hi-Fi audio devices

02/ Button Functions

2.1 Button Instructions



Buttons	Short Press	Long Press	Other Functions
SET	Short press to switch over voltage and current regulation item	Long press and at the same time, scroll Encoder for coarse adjustment	Confirm parameter modification
MENU	Short press to switch over the display contents	Long press to view current setting	Set the menu of changing parameter values
RUN/LOCK	Short press to turn on/off power output	Long press to lock parameters	
Encoder	Change numeric value, switch menus, switch over the number of pages		

2.2 Shortcut Keys

How to lock and unlock parameter:

Long press "RUN/LOCK" button for above 2 seconds to trigger parameter locking/unlocking (the lower indicator keeps on red under a locking state).

Note:

Under locking state, the function of "SET" button can not be operated. Also, voltage and current cannot be set or be remotely controlled by MDP-M01.

How to quick set selection menu of voltage and current:

Hold "SET" button, and at the same time, short press "MENU" button to enter the selection menu of quick setting of voltage and current. Use Encoder to circularly switch over the preset value, press "SET" button to select the corresponding preset value output and switch to the interface of operating state. If there is no selection, or selection time exceeds, the interface will automatically exit, or User clicks on "MENU" button to exit.

How to force to exit USB mode:

When MDP-P905 power supply module is connected to computer and the flash disk appears, "USB MODE" will be displayed on power supply screen. Here, User can long press any button for 3 seconds to exit USB mode.

2.3 Power Off And Sleep Mode

Auto sleep and power off:

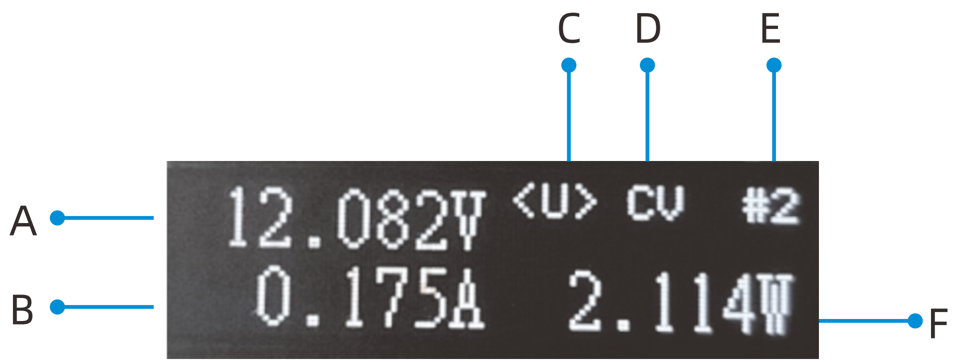
When MDP-P905 isn't connected with MDP-M01, after 1 minute since output is closed, it will go to sleep mode; after 6 minutes since output is closed, it will automatically power off.

Manual shutdown:

Long press both "SET" button and "MENU" button for 3 seconds at the same time.

03/ Function Interface Description

3.1 Basic Work Interface



<table>
<tr><th>Menu display</th><th>Function</th><th>Menu display</th><th>Function</th></tr>
<tr><td>A</td><td>Voltage display/adjustment</td><td rowspan="4">D</td><td>ON: Output turns on</td></tr>
<tr><td>B</td><td>Current display/adjustment</td><td>OFF: Output turns off</td></tr>
<tr><td rowspan="3">C</td><td><I>: Adjust current</td><td>CC: Constant current output</td></tr>
<tr><td><U>: Adjust voltage</td><td>CV: Constant voltage output</td></tr>
<tr><td> : Locked</td><td>E</td><td>#1: The corresponding channel of the current device on display control module</td></tr>
<tr><td>F</td><td colspan="3">Real-time power/ set current/ set voltage</td></tr>
</table>

Select to set voltage or current

1) In the unlocked state, short press "SET" button on the main interface to select the current setting (<I> or <U>) that needs to be modified. Select <I> to modify the set current; select <U> to modify the set voltage.

——When the setting item is <I>, scroll Encoder to set the current, the setting range is 0.001A-5.000A;

——When the setting item is <U>, scroll Encoder to set the voltage, the setting range is 0.01V-30.000V.

2) It is not possible to enter the modify setting mode in the locked state. After Encoder is inactive for 1 second, the set value is restored to the power display.

Coarse and accurate adjustment

1) Coarse adjustment: Hold "SET" button and scroll Encoder at the same time to coarsely adjust the voltage each step by 0.3V, and the current step by 0.03A;
2) Accurate adjustment: Scroll Encoder for accurate adjustment, the voltage step is 0.01V, and the current step is 0.001A.

3.2 Browse Menu

【3.2.1】 Short press "MENU" button to enter browse mode, and then short press again to return to the main interface;

【3.2.2】 Scroll Encoder to view current power setting and state. Under browse mode, if there is no operation after 5 seconds, device will automatically return to the main interface;

【3.2.3】 The operation of "RUN/LOCK" button doesn't influence the current display contents and category.



1) View input voltage



2) View input current



3) View input current limit



4) View device temperature



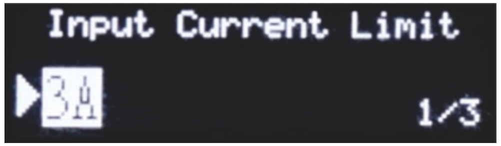
5) View version information

3.3 Setting Menu

1) Long press "MENU" button to enter the setting menu;
2) Scroll Encoder to select the menu item, and short press "SET" button to enter setting;

Set Menu 1: Input current limit;

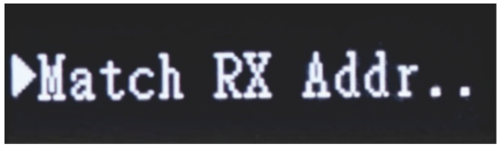
Select "Input current limit", short press "SET" button to enter setting. Scroll Encoder to adjust setting value, short press "SET" button to confirm setting and return to setting menu; or short press "MENU" button to confirm setting and exit.



Set Menu 2: Wireless address auto-matching TX and RX Addr;

Select "TX and RX Addr", short press "SET" button to enter setting (matching), and short press "MENU" button to exit.

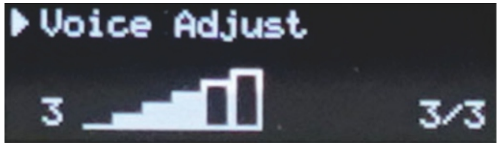




The auto-matching function of wireless address can only be started during pairing between MDP-M01 and MDP-P905. Please refer to "4.CONFIG interface" in "MDP-M01 Smart Digital Monitor User Manual" for more about the pairing methods. During matching of wireless address, if power output is on, power output will be closed compulsorily for safety protections.

Set Menu 3: Sound Adjust;

Select "Sound Adjust", short press "SET" button to enter setting, Scroll Encoder to adjust setting value, short press "SET" button to confirm setting and return to the setting page; or short press "MENU" button to confirm setting and exit.

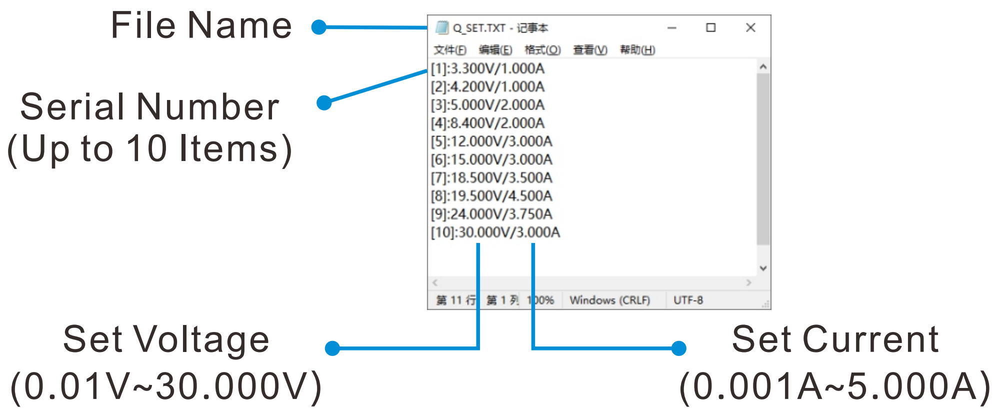


3.4 Quick Modification Of Voltage And Current



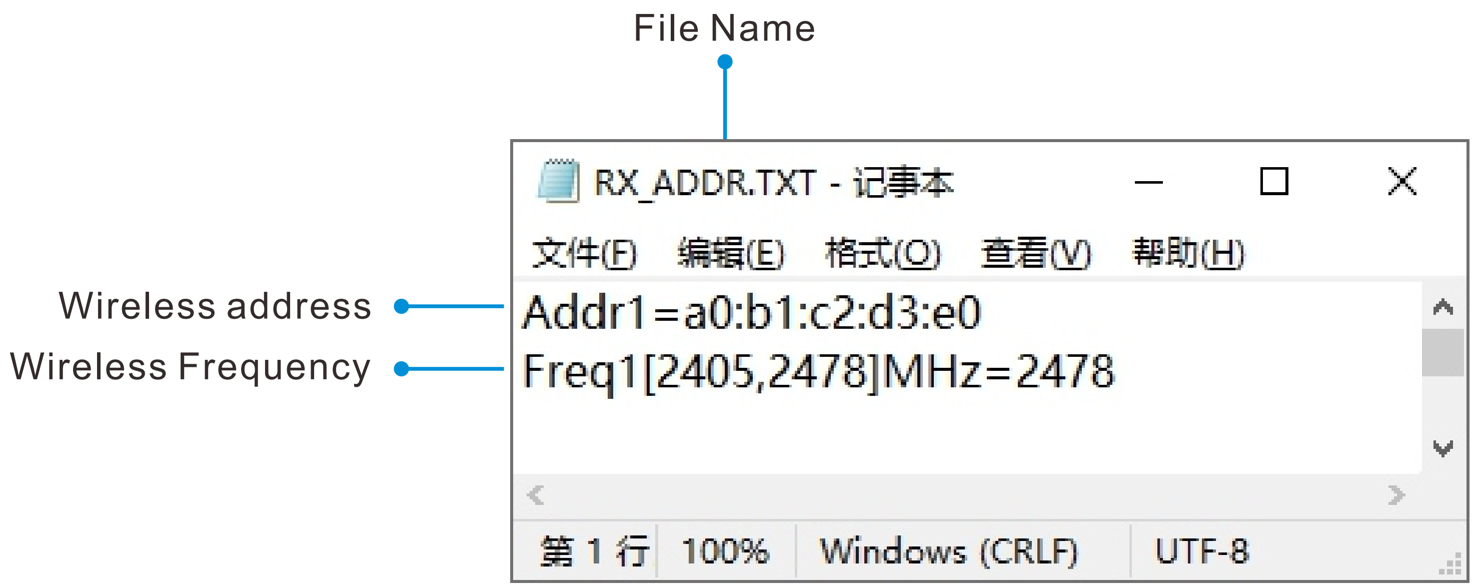
【3.4.1】 Hold "SET" button, and at the same time, short press "MENU" button to enter the menu of quick setting of voltage and current. Use Encoder to circularly switch over the preset value, press "SET" button to select the corresponding preset value output and switch to the interface of operating state. If there is no selection, or selection time exceeds, the menu will automatically exit, or User clicks on "MENU" button to exit.

【3.4.2】The quick setting of default value of current and voltage can be modified through Q_SET.TXT file. Connect MDP-P905 with computer to enter USB mode, and then open Q_SET.TXT to modify corresponding contents. The file contents are as shown in the following figure. After setting is completed, User disconnects USB and restarts MDP-P905 to bring the modification into effect.



3.5 Modification Of Wireless Address

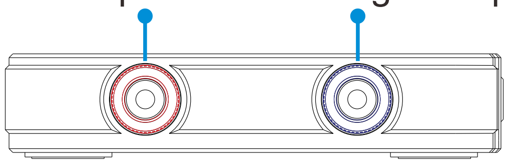
MDP-P905 can match with MDP-M01 through modifying wireless address and frequency by RX_ADDR.TXT file. Connect MDP-P905 with computer to enter USB mode, and then open RX_ADDR.TXT to modify corresponding contents. The file contents are as shown in the following figure. After setting is completed, User disconnects USB and restarts MDP-P905 to bring the modification into effect.



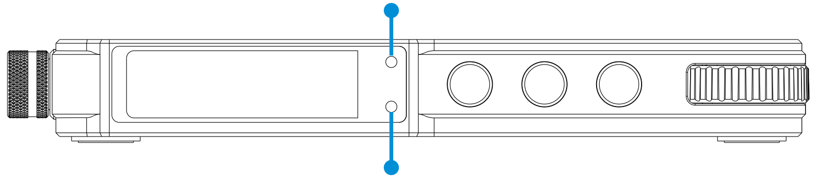
04/ Indicator Light

4.1 Indicator Interface

Output Ports:



Display Panel:



4.2 Indicator Status Description

When MDP-P905 is in different states, the panel indicator and output indicator will show different colors and states.

Indicator	Color	State	Description
Upper	Blue	Always on	Output on, constant voltage state CV
		Off	Output off
	Red	Always on	Output on, constant current state CC
		Off	Output off
Lower	Green	Always on/Flicker	Connecting with MDP-M01
		Off	Disconnect with MDP-M01
	Red	Always on	Lock state
		Off	Parameters aren't locked
Output	Positive: Red Negative: Blue	Always on	Output on
		Off	Output off, stand by; screen is off
Upper and lower	Red	Flicker	Alarm(including input overvoltage, overheating, input power-down, or meeting its own output alarm conditions set)

05/ Firmware Upgrade

1) Visit www.miniware.com.cn, download the applicable MDP-P905 firmware to computer;
2) Hold "SET" button, connect MDP-P905 with computer by data cable (3.5mm audio or USB Type-C to USB A data cable), and short press "MENU" button or "RUN/LOCK" button to enter DFU mode, a virtual disk named DFU Vx_xx_x will appear on computer ;
3) Copy the .hex firmware to the root directory of the virtual disk, and after the name suffix of firmware turns into .RDY, restart the MDP-P905 to finish the upgrade.

▲Note:

For all the versions upgraded from the previous firmware version to P905_V1.22 and above, User needs to firstly backup files into computer and then upgrade firmware, and after upgrade, format diskette and then save the files back into the virtual disk.

06/ FAQ

If MDP-P905 display "Auto Checking..." when it is turned on, it means that the decive is performing hardware self-checking and releasing internal residual charge, no voltage will be output during this process.

When the temperature of MDP-P905 is lower than 0 degrees Celsius or higher than 70 degrees Celsius, the power supply will automatically shut down;

When the following situations occur, MDP-P905 will give an alarm or buzzer warning:

Display	Reason	Solution
Display "Factory" and relevant parameters	Errors in reading files of factory parameters	Restart the device, and the configurationfile will be regenerated
Display "Param Error"	Errors in reading files of power-on parameters	Restart the device, and the configurationfile will be regenerated
Display "Quick Setting Error"	Errors in reading parameter files for quick setting of voltage and current	Check whether the Q_SET.TXT file in the flash disk is abnormal
Display "INPUT ELEC ERROR" and relevant parameters, buzzer rings, and the upper and lower indicators in red flicker;	The input current exceeds 10% of the set current value	Check whether the set current value is lower than the rated current value of the input power supply is too high
Display "INPUT VOLT < 3V", buzzer rings, and the upper and lower indicators in red flicker;	An alarm will be given when voltage is lower than 3V	Replace with an input power supply whose output voltage is higher than 3V and less than 30V
Display "INPUT VOLT> 30V ", buzzer rings, and the upper and lower indicators in red flicker;	An alarm will be given when voltage is higher than 30V	Replace with an input power supply whose output voltage is higher than 3V and less than 30V
Display "Flash Error"	Errors in flash chip	Contact after-sales service for further help
Display "Wireless Error"	Errors in wireless chip	
Display "calibrate wait usb"	Missing calibration parameters	
Display "Device ERR", and power off	Errors in hardware device	
No connection to computer, Display "USB MODE" and the device powers off	The current power supply equipment connected through 2.5mm interface may cause internal abnormalities in the power supply	Please connect device to computer through USB Type-C to USB-A cable

07/ Legal statements

FCC compliance statement
This device is complied with the regulation in the 15th part of FCC regulation.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference.
(2) This device must accept any interference received, including the interference that may cause undesired operation.

The CE mark is a registered trademark of European Community.
This CE mark shows that the product complies with all the relevant European Legal Directives.

Do not dispose in domestice household waste

- This device complies with the WEEE Directive (2002/96/EC) marking requirement. This affixed product label indicates that you must not discard this electrical or electronic product in domestichousehold waste.
- Disposal and recycling: you must dispose the device according to local law and regulations. As the device contains electronic building brick and battery, you must dispose it respectively with garbage.
- Please dispose the battery in accordance with local environmental regulations.